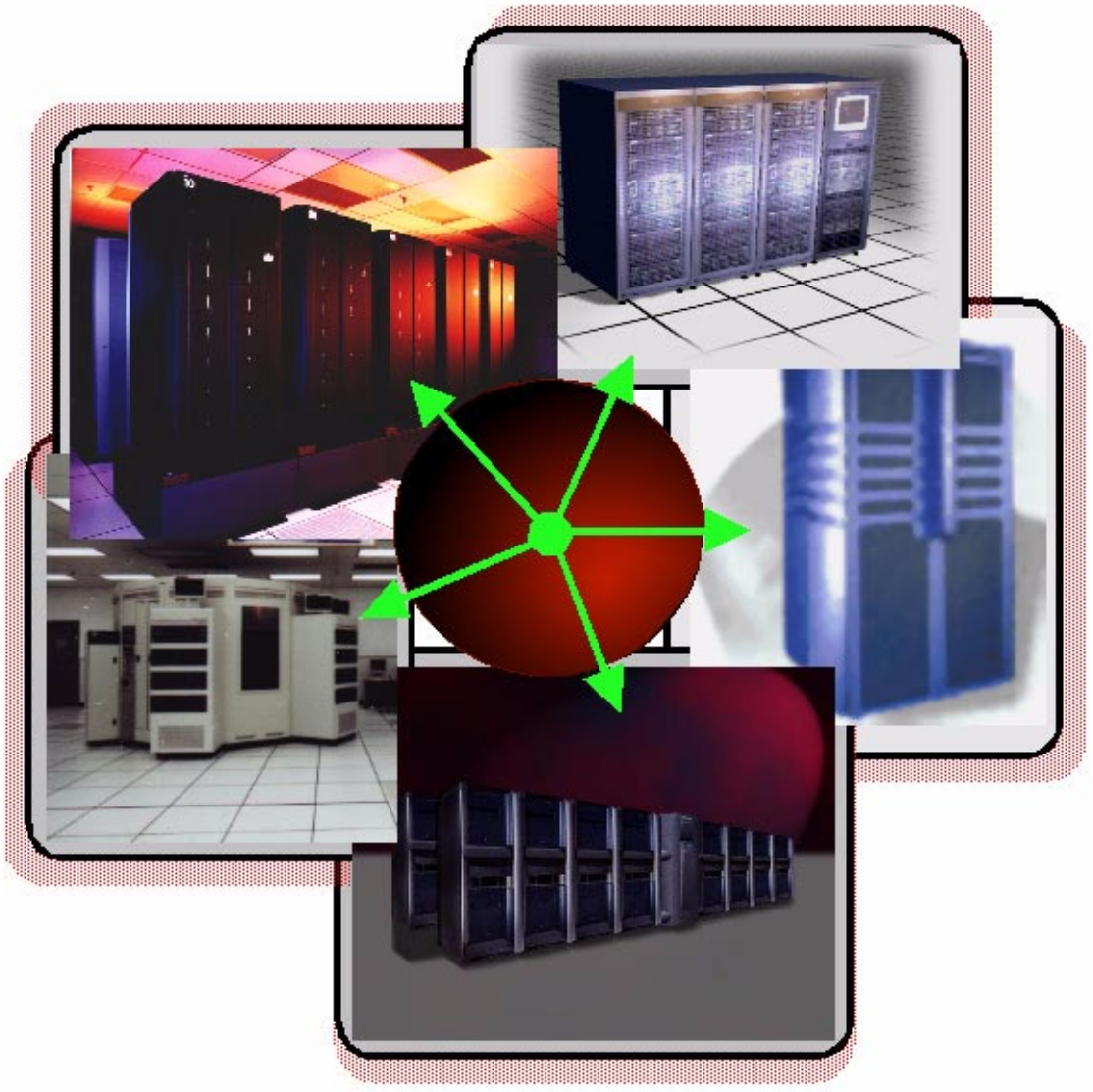
AERONAUTICAL SYSTEMS CENTER
MAJOR SHARED RESOURCE CENTER



ASC MSRC
USER'S GUIDE

September 15, 2004

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Table of Contents

1. Introduction to the ASC MSRC

This document is intended to provide an overview and introduction to using the Aeronautical Systems Center (ASC) Major Shared Resource Center (MSRC), a part of the Department of Defense (DoD) High Performance Computing (HPC) Community. The ASC MSRC is physically located in Area B, Building 676, of Wright-Patterson Air Force Base (WPAFB), near Dayton, Ohio.

The ASC MSRC is comprised of commercial and "in-house" developed scientific and engineering application software, combined with the hardware needed to support those applications. It encompasses more than merely having a collection of software and computational resources; it also includes methodologies to configure and use these resources in a simple and standardized manner.

The ASC MSRC contains a variety of application and file servers. It supports X-windowing devices to facilitate graphical user interfaces (GUIs) in accessing the available computational resources and to perform Scientific Visualization (SciVis). A vast 500-terabyte tape archival storage/retrieval capability is available to ensure the longevity and safety of every customer's important scientific data.

Customers can access any server in the ASC MSRC using the same username and Kerberos password. Customer access is limited to those servers that have been authorized by their Service/Agency Approval Authority (S/AAA). A user's files are accessible from any server via the same path; a modification made to a file by the user while logged into a particular server is (nearly) immediately visible to that user when the user is logged into any other server of the ASC MSRC. Users may connect from any accessible server or workstation to any other accessible server or workstation within the ASC MSRC through the use of Kerberized secure shells, remote shells, Telnet, and FTP commands.

An attempt to provide an understanding of how to access and utilize the ASC MSRC is given here. A basic knowledge of UNIX is assumed.

1.1 Customer Assistance

Customer assistance is available from the ASC MSRC Customer Assistance and Technology Center (CATC) via the toll free phone number: 1-888 MSRC ASC (1-888-677-2272) or email to msrchelp@asc.hpc.mil. For more detailed information about the support services available to customers see Section 4.

1.2 ASC MSRC Mission

Some obvious questions arise in introducing the ASC MSRC computing environment:

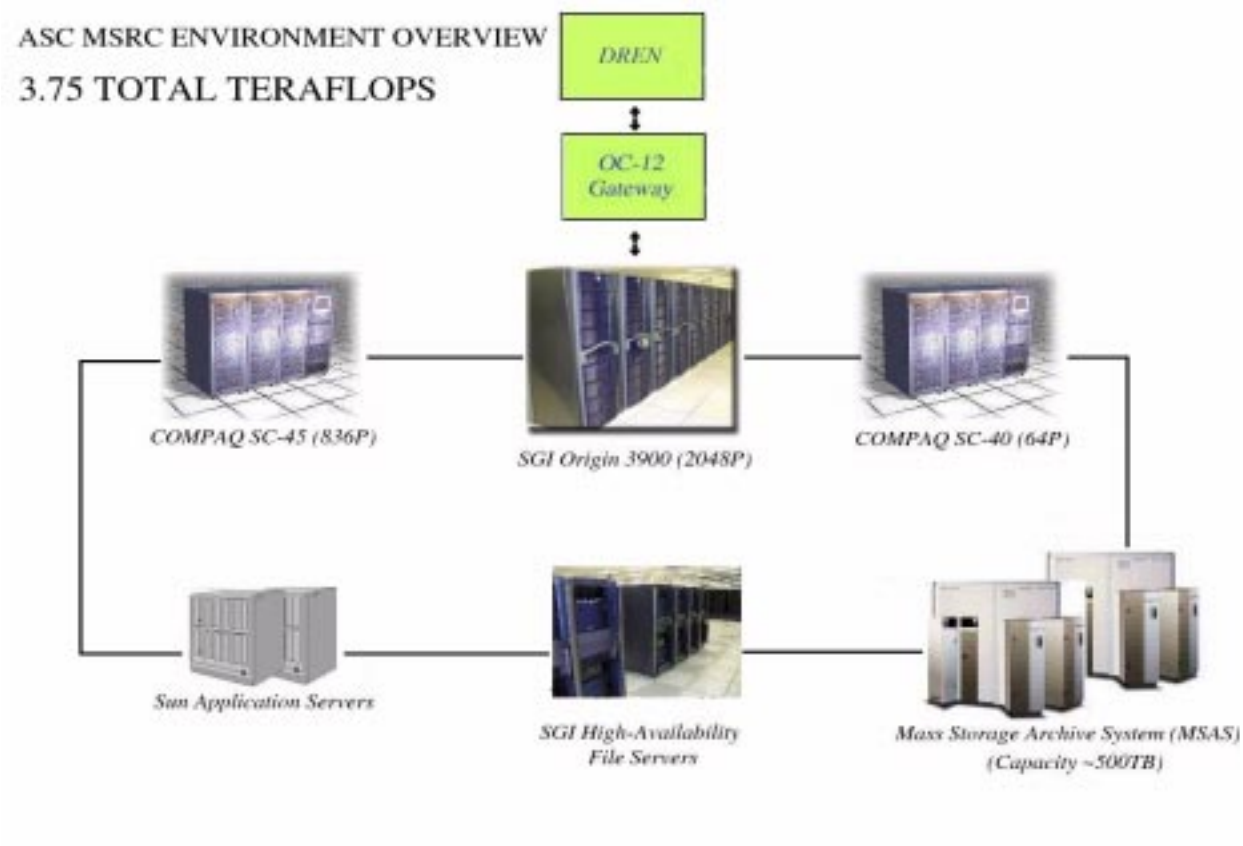
- What exactly is the ASC MSRC?
- What comprises the ASC MSRC?
- What is the ASC MSRC used for?

The ASC MSRC is composed of a collection of hardware and scientific/engineering software arranged and administered in such a way that its users are able to effectively use the hardware and software with a minimum amount of effort.

The goals of the ASC MSRC are:

1. To provide scientists and engineers with a large base of commercial scientific and engineering application software.

2. To provide specialized software for use in scientific and engineering analysis.
3. To have available utility software for making the ASC MSRC more “user friendly.”
4. To provide a network of “functionally compatible” heterogeneous computers, of appropriate classes, with similar computing environments, such that:
    a. Each server can use vendor-independent operating system shells, commands, and GUIs.
    b. User files are accessible and in the same relative path on all servers.
    c. All servers licensed to run a given set of applications can run those applications concurrently, barring physical system limitations such as memory, or accessing restrictions within the applications themselves, such as licensing limits.
    d. Centralized user/system administration is used.
    e. System administration functions are separated from application software functions.



1.3 ASC MSRC Overview

The ASC MSRC is comprised of high performance servers, high availability file servers, a SciVis facility, and an array of applications supporting five computational

technology areas (CTAs). All servers are linked together using Ethernet and Asynchronous Transfer Mode (ATM) interfaces to maximize network speed, throughput, and access. *All of these networks are interconnected and are connected to the Internet.*

A number of scientific and engineering applications are available on the ASC MSRC. These applications are diverse in nature in order to meet the varying needs of the engineering and scientific community; applications for analysis, mathematics, visualization, CAD/CAE, and program development are available on the various ASC MSRC servers.

The ASC MSRC uses the UNIX operating system on all servers. This provides the use of a consistent user interface (GUIs, operating system shells and commands) that is very similar on every system. Standardizing on UNIX also allows the selection of commercial application software, referred to below as applications, from a vast array of software developers.

The Network File System (NFS), also supplied with UNIX, allows a user's files to be simultaneously accessible to all servers within the ASC MSRC. Further, the ASC MSRC is configured so that the path location of user files is independent of the server that the user logs into; that is, if a user's home directory is `/hafs2/joe` on one server, then that user's home directory will be `/hafs2/joe` on all servers within the ASC MSRC.

1.3.1 Hardware Components

The hardware components of the ASC MSRC may broadly be classified into two major categories: servers, that provide some service to users, and peripherals to access those servers. The hardware used to access ASC MSRC servers may be further subdivided into workstations, PCs, and dumb terminals local/remote to the ASC MSRC.

1.3.2 Server Characteristics

A central component type of the ASC MSRC is the server. Servers can be divided into two major categories: file servers and compute servers. File servers have large disk capacities on which applications software and user files are stored. NFS is used to make files on file servers available to all other servers within the ASC MSRC. Compute servers perform the actual execution of applications.

1.3.3 General Environment Characteristics

Since the ASC MSRC servers' operating system shells, commands, and GUIs are very similar, the computing environment is similar throughout. One of the most novel approaches used in the ASC MSRC is that of the served (NFS-mounted) filesystem. The impact of this on the users is that ***no matter which server a user is logged into, the same home directory and subdirectory tree structure will be present***. The same file set is mounted for a particular customer, independent of the server that is being used.

The ASC MSRC is currently supported by dual, SGI Origin, High Availability File Servers (hafs). All ASC MSRC users' home directories exist on the *hafs*. For example, a user's home directory may physically reside on disk *hafs2*, (server *hafs*, disk drive 2). Since the hafs export their disk drives to the other systems within the ASC MSRC domain via NFS, and these drives are in turn mounted by every other system within the ASC

MSRC domain, customer files are available on those systems.

A set of global start-up files are executed automatically when a user logs into any of the ASC MSRC servers. These global files set up the environment the user works in, including the user's accounting and access information. These files also define the prompt to be presented when the user logs into a system. A typical prompt for user **guest** while logged into *hpc05* is:

hpc05:/hafs3/guest/

This shows that guest's home directory exists on drive 3 of server hafs. If the same user logs into the ASC MSRC compute server named *hpc04*, then the prompt would be:

hpc05:/hafs3/guest/

This is because NFS makes the customer's files available to any system within the ASC MSRC domain.

The ASC MSRC accepts a wide variety of user interface devices. The only requirement is that the device is capable of logging onto an application server. Application-specific requirements may further determine what type of device is necessary. An example of this is the visualization package ANSYS, which requires X-windowing capability to utilize its graphics capabilities.

1.3.4 Workstation Characteristics

Workstations, local and remote, have the capability to support multiple simultaneous connections and X-windows sessions. Typically, a user will log into a workstation, start up a variant of an X-window manager, and log into a compute server either across the internal network or the Internet. Once logged into the compute server, the user invokes applications, displaying output on the workstation. The main purpose of the workstations is to provide a graphical interface through their capabilities for multiple simultaneous sessions and X-windows support.

1.3.5 ANSI Terminals, X-Terminals, and PCs

In addition to X-terminals and workstations, PCs can also provide full X-windowing functionality. This functionality is provided by local PC X-server software. Due to the changing nature of computers and computer software, a listing of compatible PC X-server software is impractical. However, any PC X-server you may want to use must meet these minimum requirements:

- The PC must support a GUI.
- The PC must be connected to a network (local-area or wide-area) that has access to the ASC MSRC.
- The software must support some form of file transfer.

1.3.6 Support of Third Party Software on the ASC MSRC

Each third party software package is assigned to an Application Manager, who is responsible for installing, maintaining, and having a general knowledge of the package and its vendor. It is the Application Manager's responsibility to maintain contact with the vendor to ensure that the software package is maintained at the current release level being supported by its

vendor and to work with Customer Assistance and Technology Center in resolving user and application difficulties. The Application Manager is also responsible for tracking application usage and maintaining an adequate number of application licenses.

Supporting the Application Manager is a Systems Administration Staff who coordinates installation of the system software into the ASC MSRC and ensures the commercial applications software packages are smoothly integrated with the system software.

1.4 Changing Your Kerberos Password

Kerberos passwords can be processed on any system (high performance computer, workstation, or PC), local or remote, which has been Kerberized. All systems in the ASC MSRC environment have been Kerberized.

On your first login to the ASC MSRC environment, you are strongly encouraged to change your initial Kerberos password for two reasons. In the act of issuing your initial Kerberos password, it has been compromised (it was known to the issuer). Also your initial Kerberos password will expire shortly after it was assigned (roughly 15 to 20 days).

Kerberos passwords can be changed on your local system, if your local system has been Kerberized; otherwise your Kerberos password can be changed on all ASC MSRC systems by entering kpasswd at the system prompt. Once changed, your new Kerberos password is valid for 90 days. You must change your Kerberos password every 90 days thereafter.

Kerberos passwords must be constructed to meet the following requirements:

- Passwords require a minimum of eight characters from at least two character classes. The five character classes are lowercase, uppercase, numbers, punctuation, and all other characters.

*****IMPORTANT*****
Do NOT give or reveal your Kerberos password and/or SecurID™ PIN to ANYONE.
*****IMPORTANT*****

Should a mistake by the user occur anywhere in the password modification process, the **kpasswd** operation is aborted and the user is returned to the shell prompt.

Be sure to remember your new password. ***No one can retrieve a forgotten password.*** If you do forget your Kerberos password(s) or SecurID™ PIN, contact the ASC MSRC Customer Assistance and Technology Center (1-888-677-2272) or by e-mail at *hpc-accounts@asc.hpc.mil*.

1.5 Customer Responsibilities

The ASC MSRC is essentially a tool. As with any tool, it is necessary to use it responsibly. Listed here are some guidelines that should be followed in using the ASC MSRC:

- The ASC MSRC should be used for official business only.
- Personal business is not to be performed on the ASC MSRC; this includes working on resumes, playing games, or any outside business

activities.

- You are required to change your initial Kerberos password within 20 days. Use kpasswd to change your password. You will be required to change it again within 90 days before it expires again.
- Commit your password to memory; never leave your password where it may be seen or used by others.
- Do not share your password or give it to anyone. Sharing passwords will result in loss of account.
- Do not share your account with anyone. Sharing accounts will result in loss of account.
- Do not leave your terminal unattended while you are logged on.
- Report any print jobs created from your account that you never requested, strange, pre-read, or lost electronic mail, or any moved, added, deleted, or altered files to the Customer Assistance and Technology Center.
- Any suspected security problem should be immediately reported to the Customer Assistance and Technology Center.
- Read system Message-of-the-day (MOTDs) that are displayed every time you log in so that you are aware of system changes and down times. The MOTD will contain short bullets of information which may direct you to the ASC MSRC Web site or an e-mail for more information. If you do not read the MOTDs, we cannot be held responsible if important information does not reach you.
- Periodically, peruse the website for news and information such as updates to HPC system user guides, available training, resource availability, policies and procedures, etc.
- Notify the ASC MSRC Service Center if your phone number or e-mail address changes.
- If your e-mail address is behind a fire wall, you must arrange with your local system administrator to allow mail from this site to pass the boundary. If this is not possible, we can not be held responsible if important information does not reach you.
- This is a DoD computer system for authorized use only. Using this system constitutes consent to monitoring. All information, including personal information, placed on or sent over this system may be obtained during monitoring. Unauthorized use could result in criminal prosecution.

2. Accessing the ASC MSRC

The ASC MSRC is physically connected to the Internet, making it accessible to validated users throughout most of the world. Each ASC MSRC server has (at least) one unique Internet Protocol (IP) address, which is used to specify that server to connectivity software such as `telnet, ftp,` and `rlogin.` This chapter highlights how to ***connect*** to the ASC MSRC.

2.1 ASC MSRC Connectivity

The ASC MSRC is part of the Defense Research and Engineering Network (DREN). DREN links scientists and engineers DoD-wide to DoD's HPC centers and to each other. The ASC MSRC is one of four major DoD HPC resource centers. Each hosts a variety of HPC systems designed to fulfill mission-oriented research and development (R&D) computation requirements and to facilitate the development of new algorithms and procedures to support these requirements. Scientists and engineers nationwide can access these HPC resources from their local environments and team together on collaborative HPC-based research initiatives via DREN.

Users in WPAFB Area B can generally get to the network directly at Ethernet (10 million bits per second) or higher speeds. This "direct" network access is necessary for productive interactive graphical work, in particular, using X-windowing applications. Network access can also be gained by way of low-speed asynchronous connections via dial-up lines which use 56K baud modems connected to terminal servers. Further information on network access is available through the ASC MSRC Website at http://www.asc.hpc.mil/hardware/network.php.

A fiber optic based Metropolitan Area Network (MAN) has been implemented within Area B. Through a series of communications routers and switches, the MAN provides redundant fiber optic links throughout Area B at speeds ATM of 622 million bits per second (Mbps). This MAN connectivity provides an established corporate resource for high-speed data links within Area B.

2.2 ASC MSRC Application Server Information

The following table lists the server names, descriptions and operating systems for the ASC MSRC application servers.

Table 1: MSRC Application Servers and Addresses

System Name	Description	Operating System
svw10.asc.hpc.mil svw11.asc.hpc.mil	SGI Onyx 3 SGI Onyx 2	IRIX64 6.5 IRIX64 6.5
hpc05.asc.hpc.mil	COMPAQ SC-40	TRU64 UNIX V5
hpc09.asc.hpc.mil hpc10.asc.hpc.mil	COMPAQ SC-45	TRU64 UNIX V5
hpc11.asc.hpc.mil	SGI Origin 3900	IRIX64 6.5

2.3 Accessing With a Kerberos Ticket

Using a Kerberized client (`ssh, telnet, rlogin, rsh` or `ftp`) connect directly to the ASC MSRC system.

2.4 Accessing the ASC MSRC Via Dial-In

The ASC MSRC is part of a Wright Patterson Remote Access System (WPRAS) which can be accessed via dial-in. The WPRAS has a number of dialup lines that allow access to terminal servers. To reach a terminal server by phone, dial one of the numbers found in the table below. Then select the system by entering `telnet <system-name>` (e.g., `telnet ss1`) and you will be taken to the login prompt for that server.

A set of policies related to ***dial-in access*** has been established. More detailed information on this subject can be found at the WPAFB Network Control Center Website - https://www.asc.wpafb.af.mil/abw/cg/scb/cncc/wpras/. Please read the policies carefully before accessing the ASC MSRC by dial-in.

NOTE: ***You must apply for dial-in privileges in order to be able to use this facility. You may apply via an electronic form located at the WPAFB Network Control Center website.***

Table 2: Dial-in Phone Numbers

Phone Numbers
937-656-7327
937-656-7261
1-800-435-7549
1-800-433-8343

2.4.1 WPRAS Dial-In Procedures

Using the procedures given for your modem and terminal or personal computer, dial one of the telephone numbers listed above. If you need to connect long distance to the dial-in modems from a military installation, use the DSN prefix. If a DSN line is not available at your location, the 1-800-numbers may be used instead. Following are examples of the different ASC MSRC 'front-end' system login scenarios.

2.4.2 WPRAS Commands

logout - disconnect from MAN

Example:***logout <CR>***

after you have logged off your host system you can "logout" to logoff from the MAN.

passwd - Change your Dial-in Password

Example:***passwd <CR>***

quit - Works the same as LOGOUT.

Example:***quit <CR>***

after you have logged off your host system you can "quit" and get off the MAN.

stty - Show/Set Annex port parameters

Example:***stty <CR>***

telnet *"resource name"* - Requests a connection to another device (host/system) or service.

Example:**telnet *hpc05<CR>***

asks for a connection to *hpc03-1*

3. Using the ASC MSRC

This chapter highlights ways to customize your computing environment. Typical activities performed on the ASC MSRC are given, including some examples of using applications. A complete listing of currently available ASC MSRC applications is available via the ASC MSRC website.

3.1 ASC MSRC Interactive Resources

Interactive usage on the ASC MSRC high performance computers is for program development, including debugging and performance improvement, job preparation, job submission, and the preprocessing and postprocessing of data.

Interactive usage is **NOT** for production jobs.

Resources for interactive jobs have the following limits:

- COMPAQ SC-40 - 15 CPU minutes. Processes that run longer than this may be killed by the system administrators without warning.
- COMPAQ SC-45 - 15 CPU minutes. Processes that run longer than this may be killed by the system administrators without warning.
- SGI Origin 3900 - 15 CPU minutes. Processes that run longer than this may be killed by the system administrators without warning.

3.2 ASC MSRC `/workspace` Definition and Control

3.2.1 `/workspace`

`/workspace` is the local temporary file system (i.e., local high speed disk) that is available on all ASC MSRC HPC systems and is available to all users.

`/workspace` is not to be used as a permanent file storage area by users.

/`workspace` is to be used by executing programs to perform file I/O that is local to that system in order to avoid performing slower file I/O across a network mounted file system, such as a user's home ($HOME) and archive ($ARC) directories.

The /`workspace` file system is NOT backed up or exported to any other system. In the event of file or directory structure deletion or a catastrophic disk failure, such files and directory structures are lost.

It is the user's responsibility to transfer files that need to be saved to a location that allows for permanent file storage, such as the user's archival ($ARC) or home ($HOME) directory locations. Please note that a user's archival storage area has no disk quota assigned to it, while a user's home directory area has a disk quota assigned.

3.2.2 Creation and Access of User /`workspace` Directory

Each user is assigned ownership of a /`workspace` sub-directory named /`workspace/username`, where username is the user's ASC MSRC login name. This sub-directory will be created for the user at login via the ASC MSRC global `.cshrc` file whenever appropriate.

The environment variable $WRK is created to point to the user's `/workspace/username` directory. For example, to access $WRK from the command line type cd $WRK.

When a batch job is executed, the environment variable $WORK_DIR is created and points to the user's `/workspace/username/jobid` directory. Jobid is the job identifier number assigned by the batch submittal process.

It is recommended that user batch jobs perform the following steps:

Copy needed input data files from your archive ($ARC) directory or home ($HOME) directory to either $WRK or $WORK_DIR. (Using $WORK_DIR is recommended.)

Execute your program.

Copy output data files to be saved from $WRK or $WORK_DIR to either your archive ($ARC) directory or your home ($HOME) directory. Then delete the files from $WRK and $WORK_DIR in order to keep the `/workspace` file system from becoming too full.

Sample batch submission scripts incorporating these steps are available for each HPC system at:

http://www.asc.hpc.mil/customer/userdocs/samples/samplebatch.php

3.2.3 `/workspace` Maintenance

In order to provide sufficient free `/workspace` disk space to our users, the following `/workspace` maintenance policy was implemented on all HPC systems on 10 January 2000:

A `/workspace` scrubber program will run every day on all HPC systems.

All files and directory structures in the $WRK directory location that are older than N day(s) are subject to deletion. $WORK_DIR is part of $WRK and is an exception that is noted below.

All files and directory structures in the $WORK_DIR directory location are subject to deletion once they have aged more than N day(s) after the completion of the batch job associated with the $WORK_DIR directory.

The values for N can be found on our Policies and Procedures page:

http://www.asc.hpc.mil/overall/policy_procedure/policies/wrkspace_pol.php

For each system, a value of N was selected that would be large enough to allow users to retain temporary files and directory structures in `/workspace` but small enough to prevent, except under periods of unusually high volume, the need to delete files and directory structures less than N days old. Because workload varies, system administrators may need, on occasion, to delete /`workspace` files and directory structures less than N days old, until sufficient disk space is freed up. To minimize the times when early deletion of /`workspace` files and directory structures is required, users are encouraged to use /`workspace` efficiently and economically.

3.3 Tailoring Your Computing Environment

If you type *ls -a* while you are in your home directory, then you will see some files that start with a period. Two of these files, `.cshrc` and `.login`, were put in your directory for you when your account was created. These files are automatically

executed every time you log in to any ASC MSRC server to set up your default MSRC environment. These files were constructed by the ASC MSRC System Integration personnel to make it easier for you to use the ASC MSRC. The `.cshrc` file is executed before `.login` and contains commands related to aliases, prompts, and some environment variables. The `.login` file contains commands related to the type of terminal you are using. You should **not** alter these files.

Rather than modify these files, any customization that you may wish done should be done in the `.personal.cshrc` and/or `.personal.login` files. `.cshrc` checks to see if you have created a file called `.personal.cshrc` in your home directory; if so, then it invokes it. The same holds for `.login`; it checks for a file called `.personal.login` in your home directory; if it is present, then `.login` invokes it.

Among the additional customizations that you may perform may include the creation of aliases, changing of the prompt constructed in `.cshrc`, and the initialization of environment variables. For instance, if you prefer *dir* to *ls*, an alias can be put in to the `.personal.cshrc` file to cause the *ls* command to execute whenever *dir* is entered. A section of a possible .personal.cshrc is given below. Lines starting with pound signs ('#') are comments; any text placed on those lines is not executed.

```
#
# excerpts from a .personal.cshrc
#
# expand the path
   setenv PATH $PATH":"/usr/etc
#
# activate file completion
   set filec
# let ls give more information by default
   alias ls "ls -aF"
```

In addition to `.cshrc` and `.login`, some files which control your windowing environment when you start X-servers are copied into your home directory. The Customer Assistance and Technology Center can provide insight as to how to customize your environment based on any unique requirements that you may have.

More detailed information on this subject can be found at the ASC MSRC website. The website is discussed in more detail in Section 4.3.

3.4 ASC MSRC Exceeding Number of CPUs Requested for a Job

On the ASC MSRC HPC systems, if a job attempts to use more CPUs than was specified when the job was submitted for batch processing, then the job is automatically killed.

The Compaq SC-40/45 and the SGI Origin 3900 uses LSF for job queueing and scheduling when a batch job is submitted for processing. The following required LSF directives specify the number of processors and nodes that the job is requesting:

```
#BSUB -n N
```

Depending upon which HPC system the job is executing, the following actions will be taken if the job attempts to use more CPUs than was specified through the batch

system.

- COMPAQ SC-40/45 (*hpc05, hpc09, hpc10*)
  The Compaq SC-40/45 system will automatically kill any executing job that attempts to use more CPUs than was specified on the above LSF directive.
- SGI Origin 3900 (*hpc11*)
  The SGI Origin 3900 will automatically kill any executing job that attempts to use more CPUs than was specified on the above LSF directive.
- If you have any questions or concerns regarding this policy, contact the ASC MSRC Service Center at 1 888 MSRC ASC (1-888-677-2272) or by e-mail at msrchelp@asc.hpc.mil.

3.5 Archiving Files

Archival storage facilities typically consist of a combination of relatively inexpensive disks and tapes with large data storage capabilities. They provide the means by which infrequently used files and backup copies of important files may be maintained and retrieved without the intervention of system administrators.

The archival storage system for the ASC MSRC is currently configured with a total capacity of 500 terabytes of near-on-line storage. The system consists of a set of dual Sun E10000 cluster servers with 1.8 Terabytes of on-line RAID storage attached to dual-combined StorageTek 9310 tape silos. This facility provides long-term storage for user data files.

More detailed information can be found in the *Archival Server User's Guide.* This documentation is available in postscript and pdf formats on the ASC MSRC website at http://www.asc.hpc.mil/customer/userdocs.

3.6 Transferring Files

Because of the consistent file serving across systems, moving files is not needed as much as if each system were independent. However, it is necessary for those customers who need to transfer files to/from the ASC MSRC. File Transfer Protocol (ftp) is thus provided to facilitate file transfers. In many ways, ftp is very similar to telnet.

Begin a session by typing ftp as illustrated below:

Table 3: How to ftp

System	You Type	Comments
ftp>	***open hpc05.asc.hpc.mil***	access hpc05 server
Name (hpc05:myuname):	***myuname***	you must be authorized for the system.
ftp>	***quit***	use to exit from ***ftp***

Only a limited subset of the UNIX commands are available under ftp. These are used to get and put files and change directories.

The following commands are normally available at the ftp prompt:

open host [port] Create a connection to system identified by “host” with an optional port specification.

get remote-file [local-file]
Initiates the transfer of file “remote-file” on the client host to the local host. A filename may be specified for the file on the local host.

mget remote-files
Initiates the transfer of multiple files from the client host. “remote-files” may either be a string of files, or some systems allow wildcards to be used. For instance, mget *.f will get all files that end in .f.

put local-file [remote-file]
Initiate the transfer of a file “local-file”, from a local host, to the client host. Optionally, a file name may be specified for the file on the remote host as “remote-file”.

mput local-files

Initiate the transfer of multiple files to the remote host. “local-files” may either be a string of files, or some systems allow wildcards to be used.

verbose — Toggle ftp verbose mode. Default is verbose on. When verbose is on, all ftp messages are on.

prompt — Toggles interactive prompting during multiple file activity. Interactive prompting is the default unless the -i option was used when initiating ftp.

ascii — Set transfer type to ASCII. This is the default.

binary — Set transfer type to binary image transfer.

cd remote-directory

Change directory on remote host.

lcd local-directory

Change directory on local host.

ls [remote-directory] [local-file]

Print listing of the contents of a “remote-directory” and optionally, put in “local-file”. If “remote directory” is specified, prints the working directory. If “local-file” is not specified, prints directory to the terminal. For commands on the local system, proceed the command with an exclamation point (!).
for example:
!ls will give a listing of the local (source) system file directory.

Example: get yourfile nowmine.txt

This will get the file yourfile from the remote system, and store it as nowmine.txt in your local current directory.

3.7 Printing Files

A variety of printers, located both in Building 676 and remotely, are accessible via the ASC MSRC. Many of the printers can handle both postscript and plain-text printing. Both types of files are directed to printers via the *lp* command or by applications. Most printers connected to the MSRC can determine whether the file is in postscript format and respond accordingly.

If you need assistance with printing a file or locating a printer near your location, call the ASC MSRC Customer Assistance and Technology Center.

3.8 Migrating to the ASC MSRC

A major feature of the ASC MSRC is that it provides a new way of problem solving. Users may interact by way of the GUI with a number of ready-to-use programs. This provides an easy way to submit old batch FORTRAN/C programs. Alternatively the

user may elect to directly migrate his FORTRAN/C code.

3.8.1 The FORTRAN and C Migration Model

Many FORTRAN and C programs have been successfully migrated to the ASC MSRC from other systems. In most cases very little change was necessary to accomplish this. Experience has shown that the migration should follow this model:

1. User identifies application server for running his program. This will dictate which compiler and libraries are used.
2. User isolates FORTRAN source code and sufficient test data. Any support libraries are identified.
3. User recompiles source code on the current machine.
4. User corrects source code to eliminate any errors that make the code non-standard, then runs that compiled program with the test data to determine a baseline.
5. Program and data are moved to the ASC MSRC and recompiled for the new platform.
6. User links object code with any necessary support libraries, reruns test cases, and compares results against baseline.
7. Additional test cases are run as necessary.

The Customer Assistance and Technology Center is always available should you need assistance in any of the steps of your migration.

3.9 User Account Removal

The following steps describe the policy used to remove user accounts on the scientific systems managed by the ASC MSRC.

Upon request from User Services to close an account, the login access will be disabled for 90 days. This disabling will be done in the Kerberos Domain Controllers (KDC's). This is done to prevent access via `.rhosts, .shosts,` and `.k5login` files.

If the user has no accounts at other MSRCs, the user's Kerberos/SecurID card will be disabled and the user will be asked to return their SecurID card.

After 90 days, the following will be performed:

- Files in the home directory of the username will be placed, using the 'tar' and 'compress' commands, into a compressed archive file with the name "*username*.tar.Z." where "u*sernam*e" is the disabled user's login name, and is the date the archive is created. This compressed archive file will be moved to a designated area on the Sun archive system.
- Any existing user High Performance Disk (HPD) areas will likewise be placed into an archive file with the name "*username.resource.date*.HPD.tar.Z", where "*username*" is the disabled user's login name, "*resource*" is the name of the HPC

resource containing the user HPD, and "*date*" is the date the archive is created. This compressed archive file will be moved to a designated area on the Sun archive system.

- All of the user's files will be removed except those residing in the user's archive area. Ownership of the user's directory on the archive system will be changed to "root" with file permissions set to "rw----".
- The login account will be removed.

The compressed archive files and any other files under the user's directory on the Sun archive system will be permanently removed two years after being placed there.

3.10 ASC MSRC Commercial Software

On-line manual pages for the applications are available on the website or by entering man followed by the application name on the UNIX command line (e.g., man ansys).

Currently, the ASC MSRC includes third party applications in the following categories:

- Analysis Software
- Graphics Libraries
- Program Development Environments
- Simulation Software
- Mathematical Software
- Visualization
- Technical Publishing

These packages have been selected to support the following CTAs:

- CSM - Computational Structural Mechanics
- CFD - Computational Fluid Dynamics
- CCM - Computational Chemistry and Materials Science
- CEA - Computational Electromagnetics and Acoustics
- CEN - Computational Electronics and Nano-Electronics

Because of the fluid and frequent nature of software changes, a listing of available packages is impractical in printed form. A current list, linked to more complete information on supported versions, server limitations, and on-line manual pages, is available on the ASC MSRC website. From the ASC MSRC home page, select Software Resources, then choose the category of software in which you are interested.

4. Reference

4.1 Customer Service Center

The ASC MSRC Customer Service Center is available to respond to questions and comments related to the ASC MSRC, from 0700 to 1700 ET Monday through Friday. The Customer Service Center provides a source of real-time assistance for most problems. After hour support is available Monday through Friday, from 5pm to 7 am Eastern Time and 24 hours on weekends and holidays (Voice mail is used only when personnel are not immediately available).

The support analysts will try to help you with anything related to the ASC MSRC: third party software, UNIX and its variants, the different application servers, etc. If you have any questions about the ASC MSRC, then call the Service Center first. ***If your problem or question is beyond the scope of their expertise, they will refer you to the appropriate resource to resolve it.***

CONTACT INFORMATION:

Toll Free Phone:	**1 888 MSRC ASC** **1-888-677-2272**
Commercial Phone:	**937-255-0194**
DSN:	**785-0194**
FAX:	**937-656-9538**
Email:	**msrchelp@asc.hpc.mil**

4.2 ASC MSRC Support

More technically in-depth inquiries and problems are forwarded to the ASC MSRC Applications Support, who pursues such inquiries and problems through resolution as rapidly as possible. The ASC MSRC User Services will attempt to determine the nature of the problem, then identify and coordinate whatever resources are needed to resolve the problem.

The ASC MSRC Applications Support is ready to support in an advisory capacity ***any*** engineer or scientist who is (or potentially is) an ASC MSRC user.

4.3 ASC MSRC Website

The ASC MSRC website is available from the ASC MSRC command line. The website is the best source for current ASC MSRC information, such as latest versions of this User Guide, other user guides published by the ASC MSRC, system status, new hardware and software, and operating policies. It can be started from any of the MSRC compute servers and can be displayed on either X terminals or non-X terminals.

Some of the topics found on the website include:

APPLICATIONS

Short and long descriptions of current ASC MSRC applications

http://www.asc.hpc.mil/software/

SYSTEMS

Information on ASC MSRC servers and Archival Storage

http://www.asc.hpc.mil/hardware/

CUSTOMER SERVICE

Available Customer Services

http://www.asc.hpc.mil/customer/

ONLINE DOCUMENTATION

Listings of the ASC MSRC User Guides are available for viewing. Instructions are given on obtaining postscript versions.

http://www.asc.hpc.mil/customer/userdocs/

VISUALIZATION LAB INFORMATION

Current status and other information about the Visualization Lab.

http://www.asc.hpc.mil/sciviz/

TRAINING

Current course offerings and schedule

http://www.asc.hpc.mil/education/training/

FREQUENTLY ASKED QUESTIONS

Submit questions and read about various topics (such as “Customizing Your Environment”)

http://www.asc.hpc.mil

POLICIES AND PROCEDURES

The latest policies regarding usage of the ASC MSRC resources.

http://www.asc.hpc.mil/overall/policy_procedure/